The Importance of Sustainable Carbon

Strong policies needed to promote the uptake of sustainable carbon for a climate-neutral and circular chemical sector

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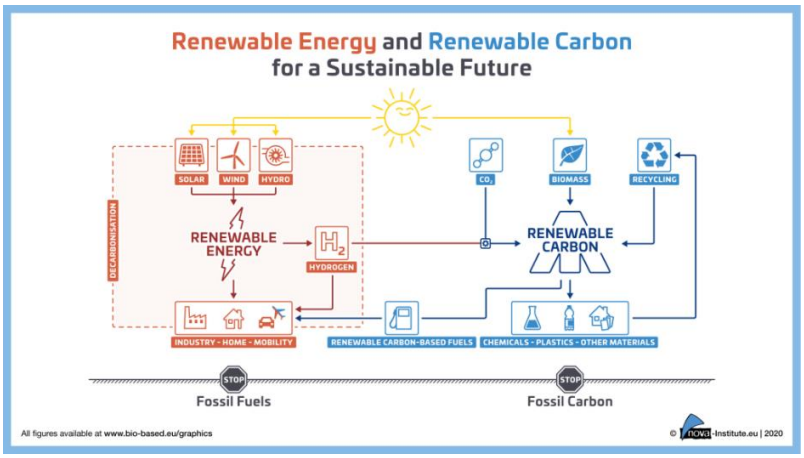
Climate data indicates that fossil fuel sources are the largest driver of anthropogenic climate change[1]. It is widely known that consumption of these sources needs to be curbed, not only to fight climate change, but also to reduce pollution, to protect biodiversity and to reduce unwanted fossil fuel dependencies. Without the defossilisation of the chemical industry our climate and environmental goals cannot be met.

The EU has implemented a number of instruments to reduce our consumption of fossil fuels, such as the Renewable Energy Directive (RED). Fossil fuel resources are also used as a chemical feedstock, which adds up to 10.4% of all fossil carbon in the EU[2]. This equals 115 Mt fossil carbon, which emits 422.05 Mt CO2 when incinerated. As carbon is a building block of chemicals and materials, decarbonisation is not an option for the chemical industry. The only solution is found in defossilisation by using sustainable carbon. There is currently little to no incentive for the chemical industry to switch their feedstock to sustainable carbon since the emission reduction takes place at the end-of-life stage and therefore does not benefit the producer. EU policies are necessary to incentivise the industry and to ensure a level playing field for the industry. Current policies however fall short to include these types of emissions because of their focus on emissions reduction at the source.

To curb climate change and to progress towards a circular economy, there is a need to shift to sustainable carbon sources in order to create more sustainable and climate-friendly production and consumption of chemicals and other carbon-containing materials. Recycled materials, sustainable biomass, and CO2 are the only three alternative sustainable carbon sources. In the Communication on Sustainable Carbon Cycles, the European Commission has already highlighted the importance of the switch to these three alternative sources by formulating the aspirational objective that at least 20% of the carbon used in chemical and plastic products should be from sustainable non-fossil sources by 2030. The use of these carbon sources should be promoted further through proper policies.



[1] https://www.pbl.nl/sites/default/files/downloads/pbl-2020-trends-in-global-co2-and-total-greenhouse-gas-emissions-2019-report_4068.pdf

[2] https://renewable-carbon.eu/publications/download-confirmation-page/?somdn_rrpage=somdn_rrpage&somdn_rrtdid=140782&somdn_rrdkey=MTQwNzgy&somdn_rrskey=MTY4NDE1MTAzMg=&somdn_rrpkey=MTI3NzE4&somdn_rrukey=MA=&somdn_rrtype=cmVkaXJlY3Q

Important pillars of the EU climate policy are the RED, the Energy Efficiency Directive (EED), and the EU Emissions Trading Scheme (ETS). The RED sets the standards for the share of renewable energy to be used in the energy mix, and the EED sets targets to reduce energy consumption. The ETS sets a cap on the total amount of greenhouse gases that can be emitted and puts a price on emission allowances, which incentivises emission reductions and promotes investment in innovative, low-carbon technologies. These three pillars are crucial in reaching climate neutrality in the EU. However, they do not cover or incentivise to change the feedstock of the chemical sector. They only cover direct and energy-related emissions. In order for the chemical industry to defossilise we need policy instruments that focus on indirect emissions in the value chain. Stimulation is needed to create a level playing field vis-à-vis the energy and fuels sectors, and to create a momentum towards defossilisation of the chemical sector. Moreover, carbon is stored for longer periods of time when applied in chemicals and materials, especially when the chemicals and materials are recycled at the end of life.

As of yet, no instruments exist to stimulate the replacement of fossil carbon in chemicals and materials. Current policy proposals[3] promote the transition to a circular and climate-neutral economy by prescribing, among other requirements, minimum levels of recycled content in packaging and other products. These proposals focus on a select number of products, and create a pull through the value chain. However, this is not enough. New instruments focusing on the input (or feedstock) need to be introduced in order to enhance the transitions to a circular and climate-neutral economy for a broader range of products. These instruments should go beyond existing policy proposals, by including biobased and CO_2-based content (in addition to recycled content). Sustainable biomass and CO_2 are crucial resources for chemical feedstock in a circular and climate-neutral chemical industry. Furthermore, additional options need to be introduced to support the switch to sustainable carbon. The Climate, Energy and Environmental Aid Guidelines need to be broadened for this purpose, and the General Block Exemption Regulation needs to introduce a category for sustainable carbon.

Neither climate nor circular economy policy in the EU offers enough incentives to promote the use of sustainable carbon as a feedstock for chemicals and materials in the chemical sector. Meanwhile, shifting from fossil carbon to sustainable carbon in the chemical sector is crucial for reaching climate neutrality, reducing pollution, protecting biodiversity, and reducing our unwanted dependencies on fossil fuels. A mix of instruments that promotes the use of sustainable carbon – through pricing, standard-setting and subsidising – is necessary to reach a climate-neutral and circular chemical sector. By ensuring that these instruments are coherent, and as integrated as possible, market distortions on the different use-forms of sustainable carbon are also minimised. EU-wide instruments ensure higher effectiveness of such instruments, and preserve a level playing field for the industry.

To stimulate the uptake of sustainable carbon in the chemical sector a range of instruments and approaches could be considered, for example…

- … more focus of the European Commission on sustainable carbon;
- … an Industrial Sustainable Carbon Regulation which sets targets for a minimum share of sustainable carbon used in the chemical sector;
- … a border adjustment mechanism for sustainable carbon;
- … more possibilities to subsidise the shift to sustainable carbon in chemicals and materials in the General Block Exemption Regulation;
- … an IPCEI for sustainable carbon as a feedstock for the chemical sector.

[3] such as the Packaging and Packaging Waste Regulation and the Ecodesign for Sustainable Product Regulation